Integrating Low Impact Development into Land Use Strategies to Reduce Stormwater in Coastal Communities

CLOSED AREA
UNLAWFUL TO TAKE OYSTERS, CLAMS, OR MUSSELS. SHELLFISH MAY CAUSE SERIOUS ILLNESS IF EATEN.
NC MARINE FISHERIES

North Carolina Coastal Federation

We work with people for a healthy and productive coast

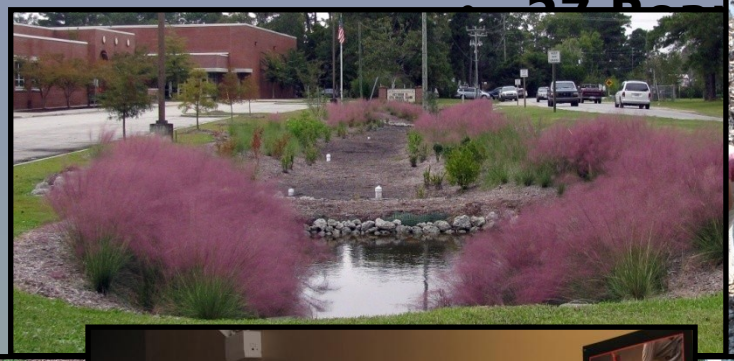
- **Founded in 1982**
- **10,000 Citizen members**
- **150 Affiliated groups**
- **22 Staff - 3 regional offices**

Focus areas:

Advocacy

Restoration

Education



Partnering to Prevent *and* Reduce Runoff

- **The Federation is working with state and local governments, landowners, developers, engineers, homebuilders, realtors, and the public.**

- **Together we are tackling stormwater runoff with Low Impact Development (LID).**

Partnering to Prevent and Reduce Runoff

Since 2005, the Federation has worked with partners to:

- **Create local LID manuals**
- **Develop watershed plans**
- **Install retrofits**
- **Promote LID at state and federal levels**

Why?.....

Stormwater

- Rain + Roof = Runoff
- The major cause of water pollution along our coast
- Costly and hazardous flooding

Conventional Development

- Collect and convey
- Move stormwater offsite
- Alters hydrology
- Costly
- Not protecting water quality

Impacts of Conventional Land Uses

- Conventional land use patterns generate increased surface runoff where virtually none existed in the natural landscape.
- Surface runoff transports abundant natural sources of bacteria and other pollutants to coastal waters.
- Pollution and flooding = big expensive problems for local governments.

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Low Impact Development Makes More Sense

- Keeps rain water on site before it becomes polluted runoff.
- Uses multiple small-scaled landscape features
  vs large and expensive
  gutters, pipes & ponds
- Can be used for new and existing developments.
- Works for residential and commercial projects.
- Saves developers money, especially when incorporated into designs early on.

Reducing Stormwater Costs with LID
EPA Report 12/07

Project	Conventional	LID	Cost Difference	Percent Difference
Bellingham City Hall	$27,600	$5,600	$22,000	80%
Auburn Hills	$2,360,385	$1,598,989	$761,396	32%
Donovan Park	$52,800	$12,800	$40,000	76%
Gap Creek	$4,620,600	$3,942,100	$678,500	15%
Garden Valley	$324,400	$260,700	$63,700	20%
Prairie Glen	$1,004,848	$599,536	$405,312	40%
Somerset	$2,456,843	$1,671,461	$785,382	32%

Ridge Field Cost Savings

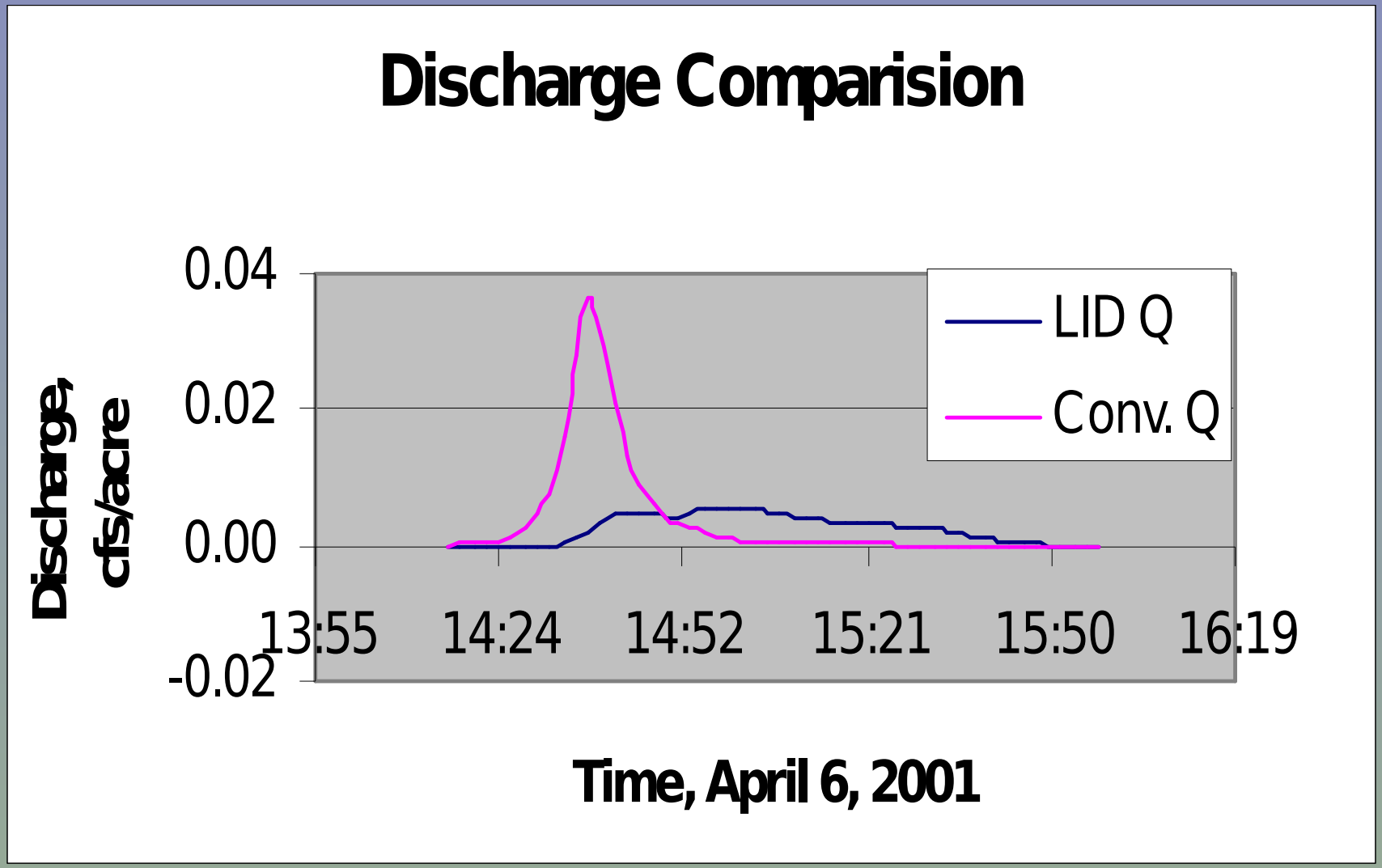
- Gained 4 lots
- Reduced stormwater pipe by 89%
- Eliminated 9,000 ft curb and gutter
- Eliminated 5 infiltration basins
- Saved $1 million in fill and grading
- Increased functional and recreation open space
- Minimized wetlands intrusion and wildlife impacts
- Created more marketable “green” real estate development

LID Performance- Somerset

Table 1. Watershed Features

Watershed	Drainage Area (acres)	Number of Houses	Houses/acre	Road Length (ft/acre)	Road Width (ft)	Percent Impervious
Low Impact Development (S2 LID)	11.84	40	3.37 houses per acre	187	36	36 %
Conventional Development (S3 CONV)	8.43	28	3.33 houses per acre	189	24	30 %

Somerset Monitoring Results



Federal Commitments to LID

- October 2004, Department of Defense
- Unified Facilities Criteria on Low Impact Development (LID) (UFC 3-210-10)
- A stormwater management strategy designed to maintain the hydrologic functions of a site and mitigate the adverse impacts of stormwater runoff from DoD construction projects.

Federal Commitments to LID

- Energy Independence and Security Act of 2007

- “Sec. 438. Storm Water Runoff Requirements for Federal Development Projects. The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

DWQ Promoting LID with Baseline Criteria for LID Projects

1. Natural Resource Inventory and Assessment
2. Narrative of Low Impact Development (LID) Techniques
3. Identify the measurable parameters used to justify an LID project.
4. Results of LID Ranking
5. A complete permit application

State Commitment to Showcase LID – Hammocks Beach State Park Stormwater Retrofit Project

- Removal of asphalt
- -Planting vegetation
- 3 bioswales
- 7 bioretention areas
- -Divert water from roofto
- -Speed bump (DOT)
- -Removal of bathhouse
- and septic tank
- -Demonstration and educational tool

NC Division of Marine Fisheries Stormwater Retrofit Project

DMF's stormwater management plan includes rain gardens, cisterns, pervious pavers. Funded by NC Clean Water Management Trust Fund

Local Commitments - LID Manuals for Voluntary Use by Developers

- Manual Includes Fact Sheets

-Stormwater Solutions
-Site Fingerprinting
-Disconnect Impervious Surfaces
-Planter Boxes
-Permeable Paving
-Cisterns
-Simple Solutions
-Rain Gardens
-Disconnect Downspouts
-Native Landscaping and Tree
-Planting
-Rain Barrels

- Adopted by Towns Dec, 2011

Citizen Commitments - Redirect Your Downspouts to Slow the Flow

- Runoff from roof tops can be reduced by over 50% if directed away from hard surfaces.
- Turn downspouts away from walkways and driveways.
- Direct downspouts to landscaped areas.

Redirect Gutter Downspouts

LID taking the coast by storm!

Lasting Partnerships

Widespread support - increasing everyday

More Info?

Comments? Questions?

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